UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,558	01/11/2002	Jian Fan	10018003-1	9516

7590 04/24/2007	EXAMINER
HEWLETT-PACKARD COMPANY Intellectual Property Administration P.O. Box 272400 Fort Collins, CO 80527-2400	LE, BRIAN Q

	ART UNIT	PAPER NUMBER
	2624	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>20 March 2007</u>.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-17,20 and 22-26* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 5-17, 20, and 22-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection. Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)

has been timely paid, the finality of the previous Office action has been withdrawn pursuant to

37 CFR 1.114. Applicant's submission filed on 03/20/2007 has been entered.

Response to Amendment and Arguments

2.   Applicant's arguments with regard to claims 1, 23, and 26 have been fully considered,

but are not considered persuasive because of the following reasons:

Regarding claim 1, the Applicant argues (page 11 of the Remarks) that Lee et al.

5,583,659 ("Lee') does not suggest/teach a concept of "determining whether the pixels having

connectivity with pixel (i,j) are edge pixels or non-edge pixels". The Examiner respectfully

disagrees. Lee discloses a determine of whether the pixels having connectivity (the

determination of window pixels around pixel (i,j) of having a connectivity that is by the

determination of gradient strength of pixels to be associated with a specific window of pixels)

(column 4, lines 5-21) (column 4, lines 5-21) with the pixel (i,j) (column 4, lines 5-21) are edge

pixels or non-edge pixels (column 4, lines 22-25 and column 7, lines 59-61).

Also, the Applicant argues (bottom of page 11 of the Remarks) that Lee fails to disclose,

"classifying a plurality of individual pixels within a mask within the image as either edge or non-

edge". Again, the Examiner respectfully disagrees. Lee teaches a concept of classifying a

plurality of individual pixels (column 4, lines 22-25) within a mask (within the window of

image) image as either edge or non-edge (the classification of pixels within a window of image

as either edge or non-edge) (column 4, lines 22-25 and column 7, lines 59-61).

In addition, the Applicant argues (page 12 of the Remarks) that Lee does not teach

averaging either only edge pixels or only non-edge pixels based on the type of pixel that the

center pixel is. The Examiner also respectfully disagrees. Lee teaches a concept of averaging

either only edge pixels or only non-edge pixels based on the type of pixel that the center pixel is

(calculation of average edge pixels if determine that the pixel (i,j) lies in the vicinity of an edge)

(column 8, lines 34-43).

Regarding arguments of claim 5, 8, 10, and 15-17, please refer back to discussion of

claim 1 above since these arguments are depend on the basis of claim 1's arguments.

The Examiner believes that all the arguments of the Applicant have been properly

addressed and explained. Thus, the rejections of all of the claims are maintained.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making
> and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it
> pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode
> contemplated by the inventor of carrying out his invention.

4.   Claims 1-3, 5-17, 20, and 22-26 are rejected under 35 U.S.C. 112, first paragraph, as

failing to comply with the written description requirement. The claim(s) contains subject matter

which was not described in the specification in such a way as to reasonably convey to one skilled

in the relevant art that the inventor(s), at the time the application was filed, had possession of the

claimed invention. Regarding independent claims 1, 23 and 26, the limitations finding edge-

bounded averaging of either "an average value of **only the** edge pixels having connectivity of

pixel (i,j), in response to determine that pixel (i,j) is an edge pixel or an average value of **only**

the non-edge pixels having connectivity with pixel (i,j) in response to determining that pixel (i,j)

is a non-edge pixel" (emphasis added). The Applicant is required to cite the exact location (page

number and line number) to show the support of the limitations.

Claims not specifically addressed are rejected because they are dependent of the rejected

claims.

Claim Rejections - 35 USC § 102

5.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6.   Claims 1-3, 6 and 23-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee

et al. U.S. Patent No. 5,583,659.

Regarding claim 1, Lee teaches a method to identify text-like pixels (characters) from an

image (column 5, lines 63-65), the method comprising:

Classifying a plurality of individual pixels within a mask within the image as either edge

or non-edge (column 4, lines 23-25), wherein a pixel (i,j) is located at the center of mask

(abstract and column 4, line 5);

Determining whether the pixel (i,j) is an edge pixel or a non-edge pixel (column 4, lines

23-25); and

Determining of whether the pixels having connectivity (the determination of window

pixels around pixel (i,j) of having a connectivity that is by the determination of gradient strength

of pixels to be associated with a specific window of pixels) (column 4, lines 5-21) (column 4,

lines 5-21) with the pixel (i,j) (column 4, lines 5-21) are edge pixels or non-edge pixels (column

4, lines 22-25 and column 7, lines 59-61); and

Performing edge-bounded averaging (column 4, lines 29-31), wherein the edge-bounded

averaging includes finding one of either:

An average value of only the edge pixels having connectivity with pixel (i,j), in response

to determining that pixel (i,j) is an edge pixel (calculation of average edge pixels if determine

that the pixel (i,j) lies in the vicinity of an edge) (column 8, lines 34-43).

For claim 2, Lee further teaches the method further comprising:

(c) examining sub-blobs of pixels (the analysis of gradient strength by pixel in pixel

window) within the image (column 7, lines 35-45); and

(d) performing sub-blob connectivity analysis (perform analysis determine whether the

pixel is in a vicinity of edge in a window of pixels of the image) (column 7, lines 55-67).

Referring to claim 3, Lee teaches the method further comprising:

(e) identifying and classifying edges of pixels within the image (column 4, lines 23-25);

(f) performing filling to further classify pixels within the image (the step of re-assigning,

correcting and merging pixels into either black or white pixels using gray-scale analysis)

(column 8, lines 1-33).

(g) performing consistency analysis of pixels within the image (a test to determine

whether pixel lies in a vicinity of an edge of an image) (column 7, lines 59-62).

(h) performing pixel connectivity analysis of pixels within the image (perform analysis determine whether the pixel is in a vicinity of edge in a window of pixels of the image) (column 7, lines 55-67); and

(i) identifying text pixels within the image (column 5, line 64 to column 6, line 8).

For claim 6, Lee discloses the method further comprising smoothing the image (to classify pixels in image region of uniform tone and to remove boundary artifacts) (column 12, lines 50-52 and column 13, lines 10-12).

For claim 23-25, please refer back to claims 1-3 for the teaching and explanations.

Regarding claim 26, please refer back to claim 1 for further teachings and explanations. In addition, Lee teaches a computer readable storage medium with computer programs comprising instructions to process digital image and aforementioned limitations in claim 1 (system with digital processor) (column 6, lines 15-44).

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8.   .   Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Lee et al. U.S. Patent No. 6,160,913 and Kodaira et al. U.S 6,868,183 as applied to claim 1 above.

Regarding claim 5, Lee does not explicitly teach the method comprising performing color space conversion of the image. Kodaira teaches a method of processing text-like pixels (column 4, lines 58-65) comprises a color space conversion mean (column 16, lines 1-20). Modifying Lee's method of processing text-like pixels according to Kodaira would able to allow the color conversion capable from one color space to another. This would improve processing and therefore, it would have been obvious to one of the ordinary skill in the art to modify Lee according to Kodaira.

9.   Claims 8, 10, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Lee et al. U.S. Patent No. 6,160,913 and Hashimoto et al. U.S 6,987,045 as applied to claims 1-3 above.

Regarding claim 8, as discussed in claims 1-3, Lee teaches a method of pixels classification and edge processing. However, Lee does not explicitly teaches the method of classifying edges of pixels wherein pixels can be classified as non edge, white edge or black edge. Hashimoto teaches a method of processing text-like of the image (character edge processing) (abstract) wherein pixels are classified as non edge (column 11, lines 42-47). Modifying Lee's method of processing text-like pixels according to Hashimoto would able to classify pixels of image to more specific regions whether black edge, white edge or no edge for further processing. This would improve processing and therefore, it would have been obvious to one of the ordinary skill in the art to modify Lee according to Hashimoto.

For claim 10, Hashimoto also teaches the method wherein classifying line segments o pixels starting from a first side of a line proceeding to a second side of the line identifying

consecutive segments of pixels as non edge, white edge or black edge (column 4, lines 64-67 to

column 5, lines 1-11).

As to claim 15, Lee discloses the method wherein step (h) performing pixel connectivity

analysis of pixels within the image (perform analysis determine whether the pixel is in a vicinity

of edge in a window of pixels of the image) (column 7, lines 55-67) comprises:

Identifying aggregates of pixel having been identified as candidates for text, the

aggregates being sub-blobs (sum of all the gradient intensity values in a window) (column 10,

lines 20-25); and

Collecting statistics with respect to each sub-blob, wherein said statistics are selected

from the group consisting of total number of pixels (absolute sum) (column 7, lines 15-40).

Regarding claim 16, Hashimoto further teaches the method wherein step (c) examining

sub-blobs of pixels within the image comprises: examining each sub-blob to determine whether

it is non text (the process of differentiate in gradation of target pixel and each of the eight

adjacent pixels to determine non-edge which also is non text since Hashimoto teaches text's edge

processing) (column 4, lines 64-67 to column 5, lines 1-11).

Regarding claim 17, please refer back to claims 10 and 16 for further teachings and

explanations.

Allowable Subject Matter

10.   Claims 7, 9, 11-14, 20, and 22 would be allowable if rewritten to overcome the

rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all

of the limitations of the base claim and any intervening claims.

Contact Information

11.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Q. Le whose telephone number is 571-272-7424. The examiner can normally be reached on 8:30 A.M - 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mathew Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian Le
April 23, 2007